

ND STROKE Coordinators Case Studies

ND Stroke & Cardiac System Conference, Bismarck, ND, May 18, 2015



STROKE Coordinator Case Study

Altru Health System, Grand Forks



Presentation

Family called “911”

- Cooking in the kitchen
- Family heard a loud bang
- Left sided facial droop
- Left arm weakness
- Difficulty finding words
- Slurred speech



Patients History

- 91 year old female
- Hypertension
- Thyroid disease
- Hyperlipidemia
- CAD/stent placement
- CHF
- History of A-Fib
- Non-smoker

Home Medications:

- ASA
- Norvasc
- Lisinopril
- Levothyroxine
- Stopped Coumadin-bleeding issues

Critical Access EMS

- 12:59 Ambulance dispatched
- 13:12 Arrive at patient home
- 13:25 Depart for Altru
- 13:52 Intercept with Altru EMS
- 14:15 Arrived at Altru

Overview

- 13 minute on scene time
- 46 miles to Altru
- 76 minutes from 911 call to arrival at Altru

Called Medical Control and told to bypass CAH and transport to Altru

Altru Ambulance Intercept

- 13:41 Dispatch time
- 13:52 Patient contact on interstate
- 14:02 In route to Altru
- 14:08 **Blood drawn for lab work**
- 14:15 Arrived at Altru

Summary

- Total time **10 minutes** for intercept process



Altru ED Timeline

- 14:16 Patient arrived at Altru
- 14:18 MD assessment
- 14:25 CT complete
- 14:50 CT Interpretation
- 14:54 Labs resulted
- 14:57 NIH completed (15)
- 15:00 Dysphagia Screening
- 15:18 Labetalol given
- 15:25 Alteplase given



ED Summary

<u>Door to MD Assessment</u>	<u>Door to CT Scan</u>	<u>Door to Stroke Code Called</u>	<u>Door to CT Interpretation</u>	<u>Door to EKG</u>	<u>Door to Lab Results</u>	<u>Door to tPA Administered</u>
Goal Time: < 10 mins	Goal Time: < 25 mins	Goal Time: < 10 mins	Goal Time: <45 mins	Goal Time: < 45 mins	Goal Time: < 45 mins	Goal Time: < 60 mins
12 mins	9 mins	35 mins prior to arrival	34 mins	32 mins	38 mins	69 mins

Slight delay in tPA administration- BP elevated prior to administration

Patient Summary

- Significant improvements in the ED post tPA infusion
 - Admitted to the ICU
 - Next day – no difficulties with left side extremities
 - Only slight left facial droop remains
-
- Discharged home with home health about a week later.
 - No deficits at time of discharge.

What Went Smooth?

- Patient family call “911” immediately
- By-passed CAH / Intercept arranged with Altru Ambulance
- Direct transport to Altru Health System from patient’s home
- Blood drawn by EMS for lab work

TEAM WORK at it’s finest!

STROKE Coordinator Case Study

Essentia Health, Fargo



NORTH DAKOTA
DEPARTMENT *of* HEALTH

Subarachnoid Hemorrhage Case Study

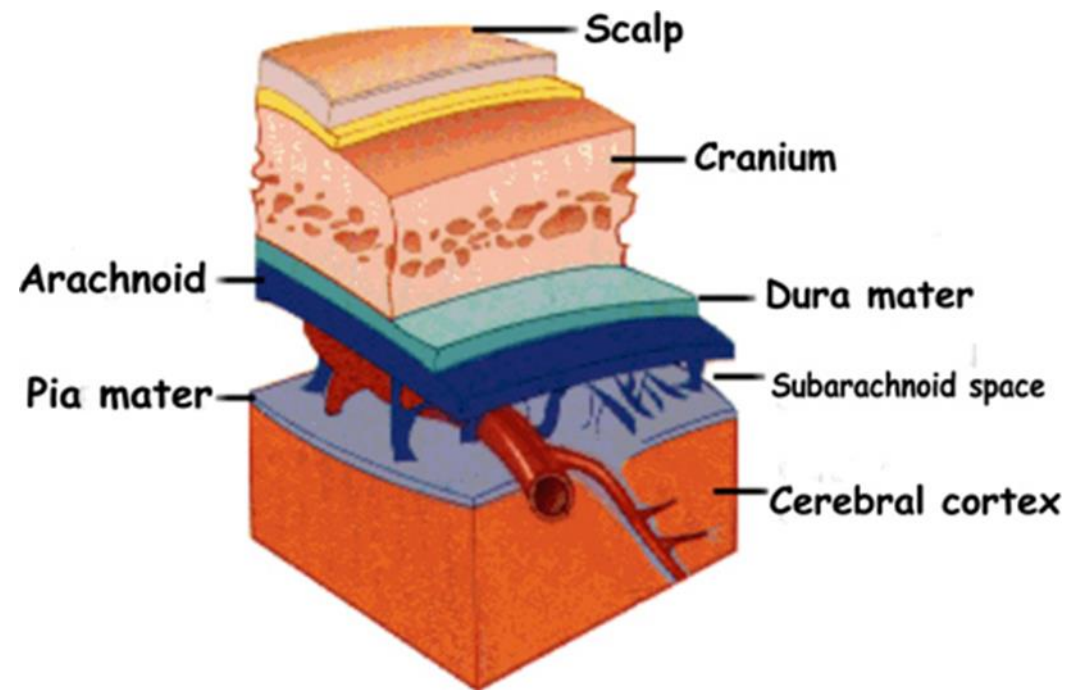
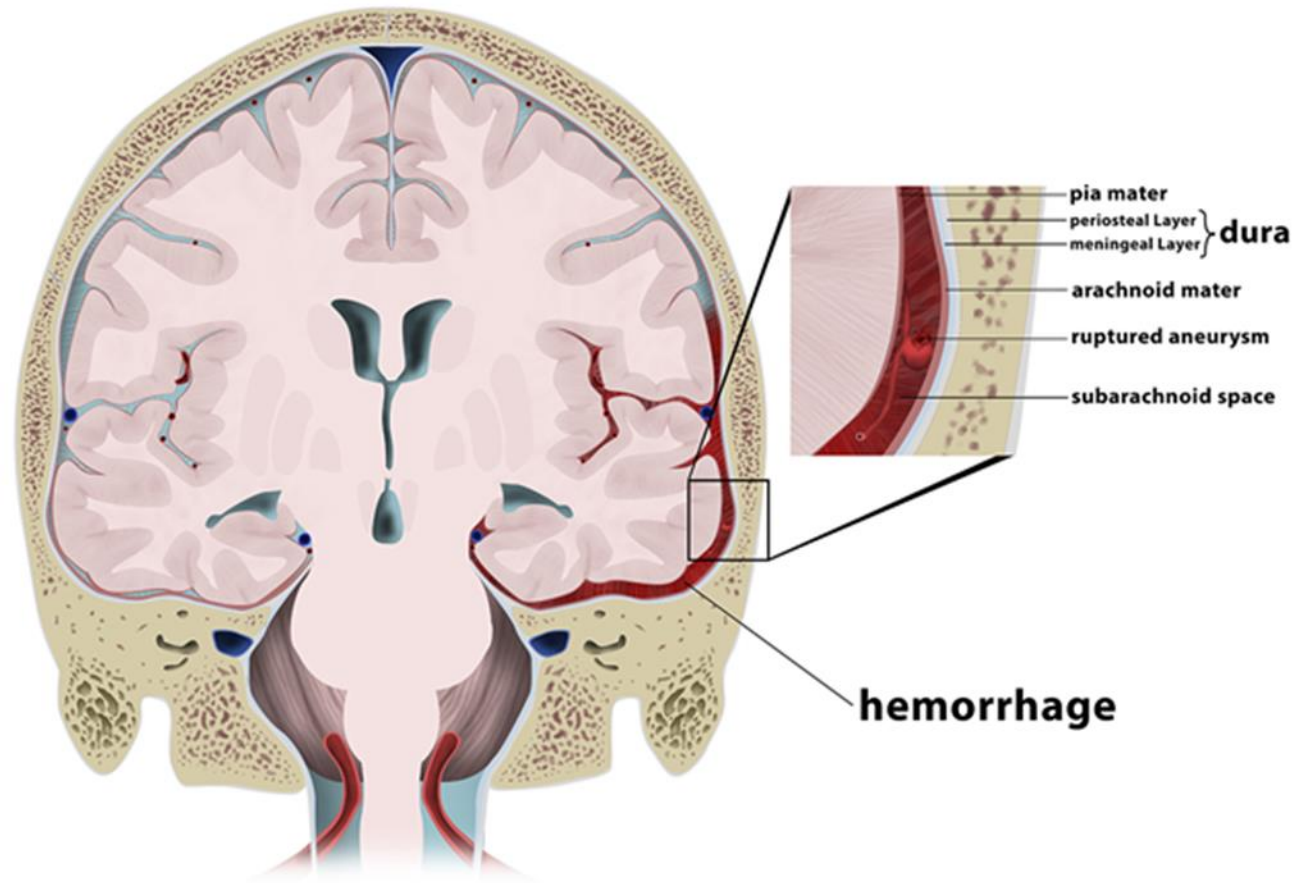


Image: www.thewellingtonneurosurgeryunit.com

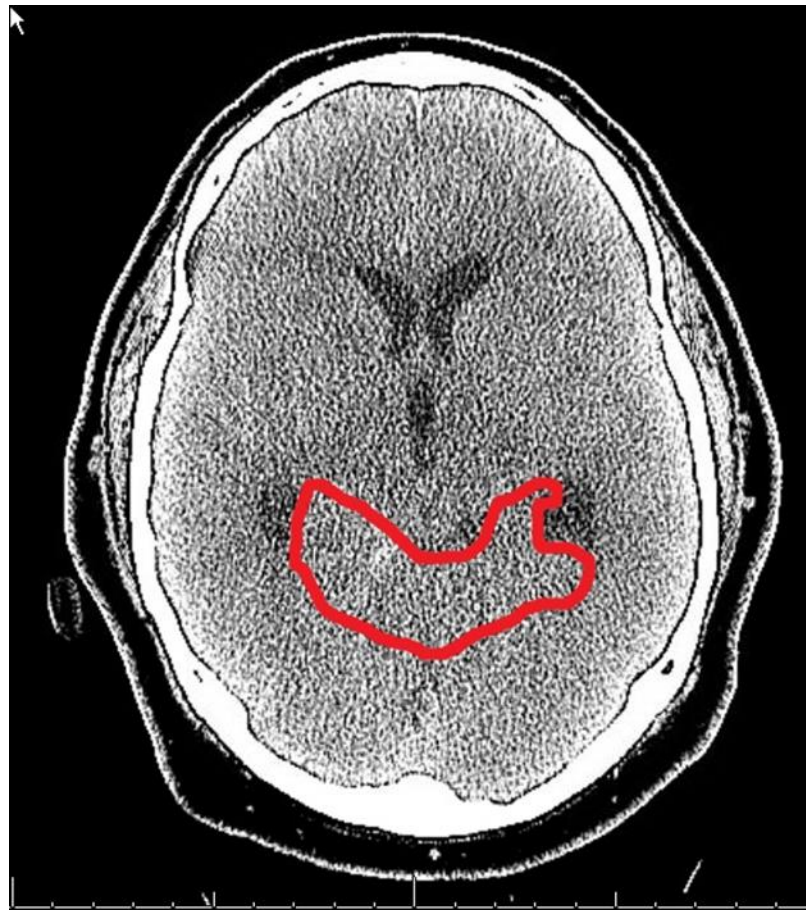
Subarachnoid Hemorrhage



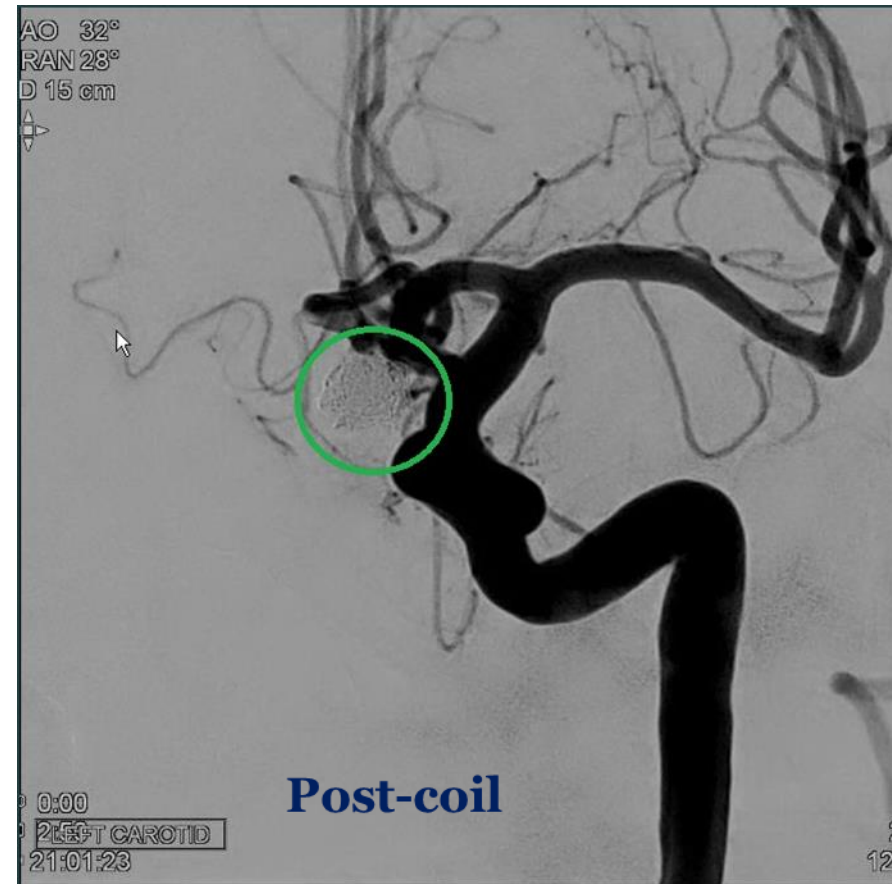
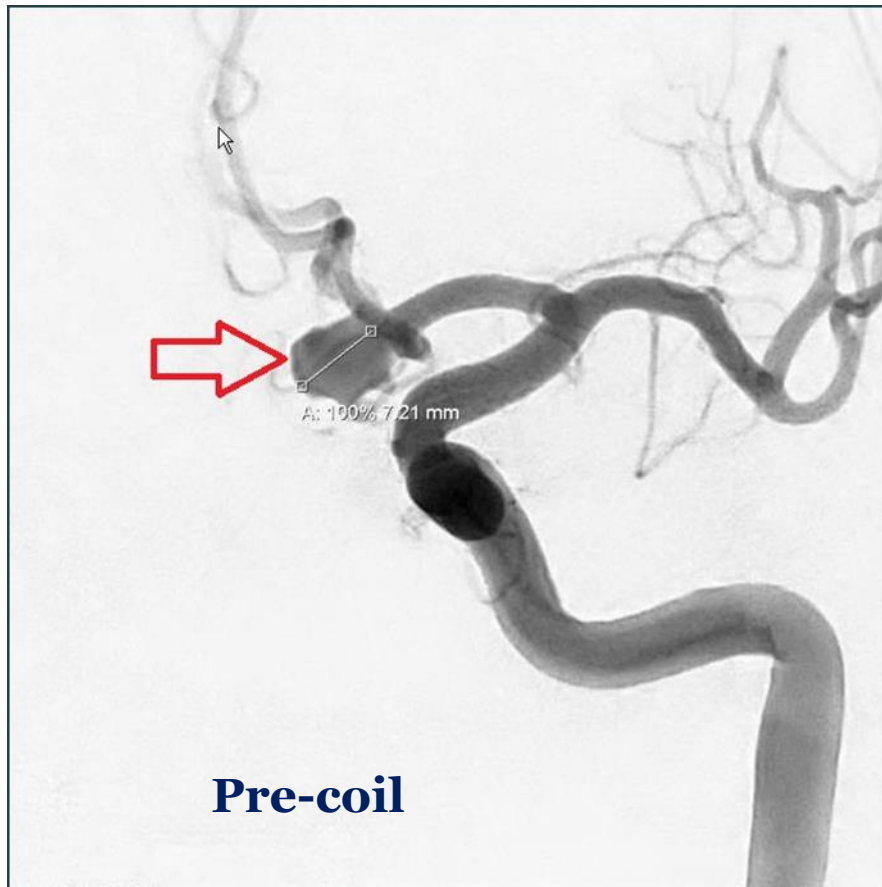
Subarachnoid Hemorrhage Case Study

- 56 year old male
- Sudden, severe headache
- At home, passed out in shower
- Presented to CAH
- Somnolent in ER
- Hypertensive with SBP >220

CT Scan at CAH

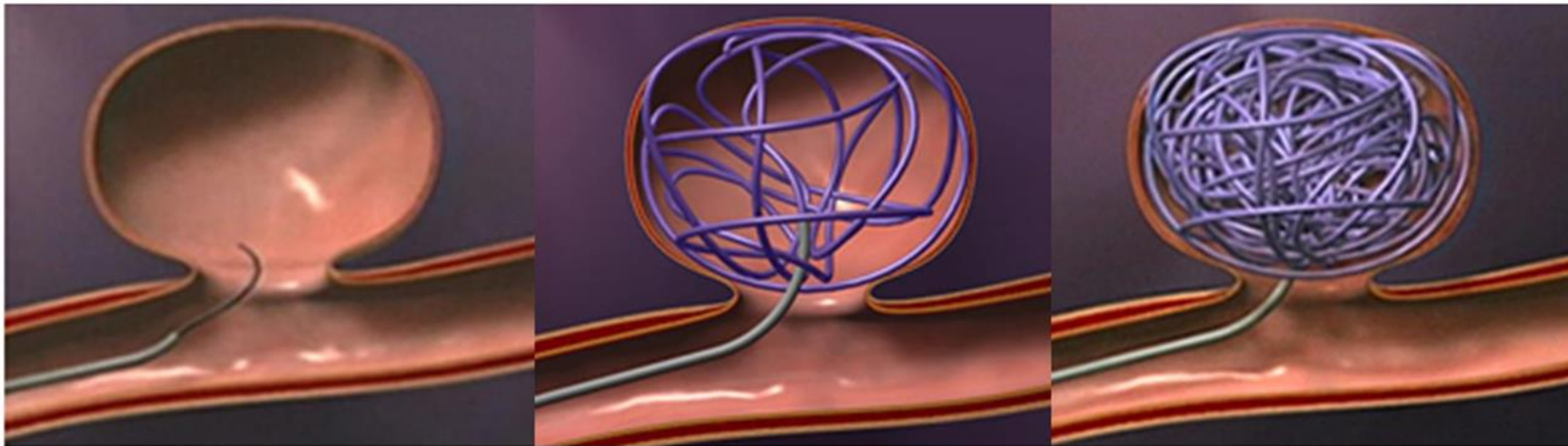


Ruptured Cerebral Aneurysm



Cerebral Aneurysm Treatment

- Endovascular coiling



Essentia Health
Here with you

Image: www.brainaneurysm.com

Essentia Health - Fargo

Stroke and Neurovascular Center

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Outcome

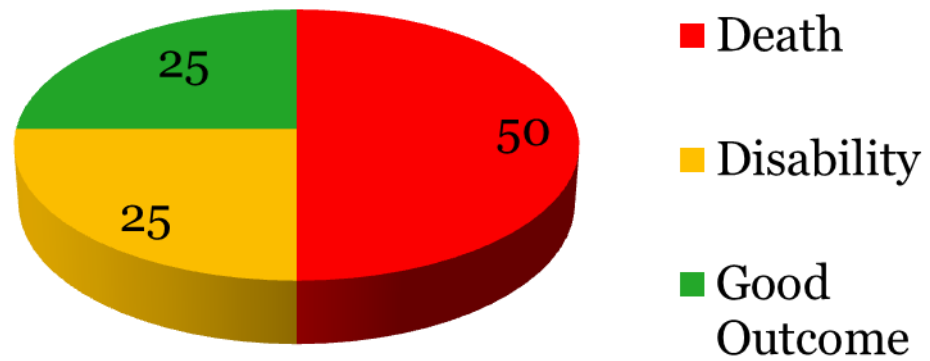
- Patient NIHSS = ZERO at discharge
- Discharged home with no deficits



Image: blueyonder.co.uk

Great Outcome

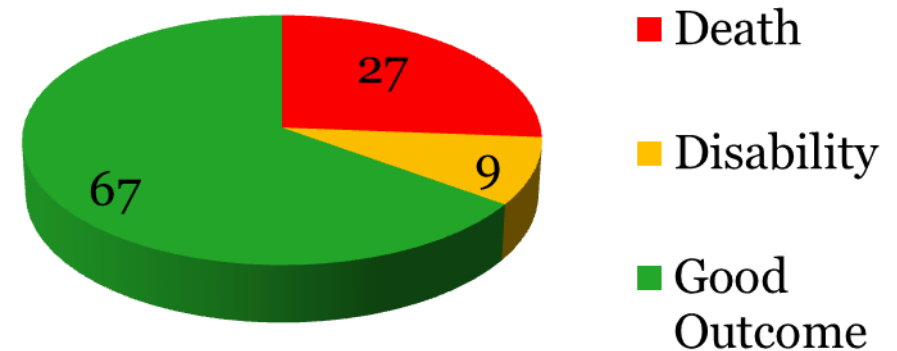
**Cerebral Aneurysm
Rupture**
Natural History



**Cerebral Aneurysm
Rupture**



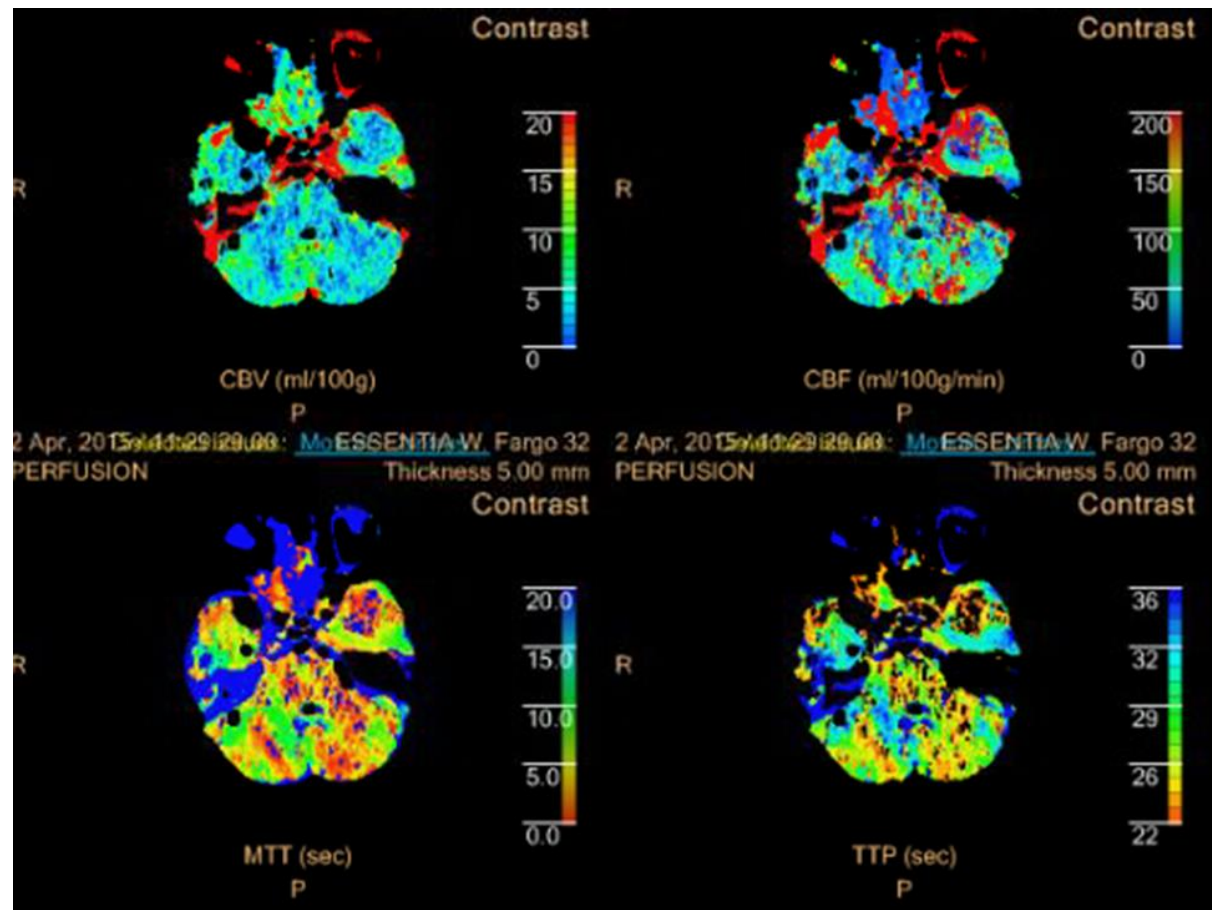
Essentia Health



Acute Ischemic Stroke Case Study

- 70 y/o female
- LKW: 2200 Thursday night
- Symptoms noted: 0730 Friday morning
- NIHSS: 18
- Transferred to Essentia-Fargo - Comprehensive stroke evaluation
- CT-Perfusion Scan: Large mismatch L) MCA territories
- Viable brain tissue noted!

CT-Perfusion Scan



Outcome

- **Day 1:** NIHSS = 18 (confusion, visual deficit, severe R) weakness, facial droop, sensory loss, aphasia)
- **Day 2:** NIHSS = 13
- **Discharge:** NIHSS = 4 (right sided weakness and mild aphasia)
- Good candidate for rehab, sent to acute care facility for continued work toward baseline

Wake-Up Stroke

- Out of window for IV tPA (LKW = 9.5 hours earlier)
- Taken for emergent ENDOVASCULAR THERAPY
- L) MCA occlusion
- Stent retriever device used to recanalize vessel
- Blood flow restored
 - TICI score from I to III

TICI score

TICI Score

0-I: No or limited perfusion



IIa: Less than half perfusion

IIb: Half or greater perfusion

III: Full perfusion



Essentia Health Stroke & Neurovascular Center



STROKE Coordinator Case Study

Sanford Health Fargo



The Rapidly Improving Patient.....Stroke Chain of Survival

Detection:

- 911 dispatcher gets call at 1530
 - Patient experiencing abrupt onset of the inability to talk, while having conversation with friend

Dispatch and Delivery:

- EMS dispatch at 1531, arrival to patient 1532
 - 77yo, Male, unknown medical history
 - BP 220/120, EKG NSR
 - EMS calls stroke alert enroute to hospital

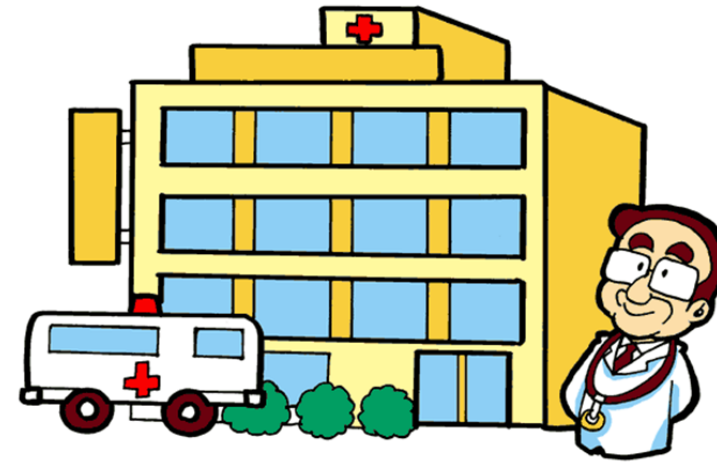


Delivery, Door, Data:

- Arrival to Critical Access Hospital- 1547
 - Stroke Code process occurred immediately
 - Initial NIHSS 9
 - Severe aphasia, severe dysarthria, unable to answer LOC questions, and bilateral leg weakness (previous injury)
 - 1603 patient returns baseline
 - BP comes down on own to 180/91
 - CT negative

Decision and Disposition:

- Patient ruled as not a tPA candidate



- Provider Calls OneCall for transfer of possible TIA vs HTN encephalopathy patient

Transfer to Primary Stroke Center

Delivery and Data:

- Patient sent via Ground Ambulance
 - Just prior to arrival patient becomes aphasic, and then rapidly begins to improve.Detection
 - BP continues to range from 127-176/77-94
 - Heart rhythm continues in NSR



Arrival

Delivery, Door, Data:

- Stroke Code initiated in EC
 - Patient improved and then began to show more neurologic deficits
 - NIHSS 9
 - LOC question, Right Leg weakness(2), Left leg(3), severe aphasia, mild dysarthria
 - Repeat CT

Decision and Drug:

- Deemed Candidate for tPA
 - tPA given 39 minutes from arrival



Outcome

- Admission to Critical Care NIHSS 6
 - Language back to normal- clear and fluent
- MRI 24hrs post tPA showed L) parietotemporal stroke
- Stroke Work up- HTN...classified as cryptogenic stroke
 - Patient discharge home with wearable wireless patch to monitor continuous heart rhythm for 14 days
- Bingo
 - Atrial fibrillation detected and started anti-coagulation

Take Away

- Importance of rapid evaluation
 - This occurred 4 times in this case
- Evaluation of Cause of Neurological Deficits



STROKE Coordinator Case Study

CHI St. Alexius Health, Bismarck



Patient Information

- 81 year old Female presented to ED with acute right hemibody weakness and aphasia
- Onset approximately one hour prior to arrival
- NIHSS 20
- History of atrial fibrillation, INR was subtherapeutic at 1
- Bilateral cataract extraction preceding day-Coumadin not held for procedure

Past Medical History

- Atrial fibrillation
- Status post pacemaker placement
- Hypertension
- Hyperlipidemia
- History of prior TIA
- Multivalvular regurgitation (aortic, mitral and tricuspid valves)
- Bilateral cataract surgery day prior

IMAGING

- CT of head suggestive of acute clot
- CT perfusion and CT angiogram were performed and an intraluminal clot was noted in the left MCA

- Patient presented as a Code Level 3. After discussion and review, family requested Code Level 2.
- Family agreed to proceed with intervention but declined treatment with systemic thrombolytics
- Patient was treated with intra arterial t-PA and intracranial thrombectomy by interventional radiology

POST PROCEDURE

- Marked improvement in patient:
 - Aphasia resolved
 - Facial droop resolved
 - Power loss in right arm resolved
 - NIHSS 0 (Day 2)
- Patient was discharged to her home after four days with stroke symptoms completely resolved

DISCUSSION

- Because of patient's presenting Code status, patient's aphasia and family discussion there was delay with intervention
- TIMES:
 - LKW 13:20
 - Triage in ED 14:08
 - CT results reported 14:32
 - IR intracranial thrombectomy 16:30

STROKE Coordinator-Inpatient Stroke

Trinity Health, Minot

Objectives

- Define Inpatient stroke and review challenges in the Critical Access Hospital
- Review Case Studies from our institution
- Develop Action Plans and tools to assist your facility.

Definition of Inpatient Stroke

- A stroke occurring while the patient is hospitalized with another diagnosis or procedure
- Inpatient stroke patients are at higher risk for morbidity and mortality from their stroke as they are already ill

Incidence of stroke while hospitalized

- Nationally between 5-15% of stroke occur in hospitalized patients. Meaning that 35,000-70,000 strokes take place each year in hospitalized patients.

Recognition of stroke in Inpatients

- Recognizing stroke in inpatients is trickier as there are many possible explanations for mental changes and other stroke like symptoms on post surgical patients.
- Medications causing the symptoms (Sedation, pain meds, etc)
- Procedures (Surgery on leg causing it to be weaker)
- NIHSS is a great tool to pick out subtle neuro changes

Case Study

- 68 y.o. male patient admitted for elective cardiac angiogram
- Post procedure admitted to ICU, due to need for further intervention.
- PMH: Previous cancer treatment in 1978, HTN, Dyslipidemia, Aortic Stenosis
- Home Medications: Lipitor, Atenolol, Aspirin, Norvasc, L-Thyroxine, Allopurinol

Case Study

- Patient admitted to ICU, had received extra dose of sedation for anxiety during procedure. RN noted some speech difficulties but related to extra medication.
- Patient continued to have speech problems, physician notified with order for Narcan received. Patient received the dose without change in symptoms. Was contacted again without any further orders.
- Cardiac surgeon saw patient in consult, felt the patient was having a stroke, and also ordered a dose of Narcan.
- Stroke Coordinator notified. NIHSS completed showing expressive aphasia. Stroke Alert called. Neurology involved

Case Study

- LKW: 0900
- CT Scan Head and Chest: 0953
- Stroke Coordinator consult 1145/Stroke Alert
- NIHSS 8
- MRI started at 1209
- tPA 1240

Case Study

- Patient was tPA candidate, delay to treatment due to physician resistance.
- Outcome: Patient did well, continued to have slight residual speech problem that improved prior to discharge. Outpatient speech therapy.
- **Barriers:** Medication possibly masked symptoms. Even wife felt symptoms were related to medication. Physician did not believe it was a stroke.

Observations

- Further staff education required for recognition of stroke in Inpatients. Physician vs. Nurse
- Risk factors should be reviewed to “predict” high risk patients
- Education focused on assessment skills, trust that knowledge, and make the call. Family and staff initiated “Rapid Responses”.

Barriers to Inpatient Stroke Care

- Assessment of patient
- Provider buy-in
- Awareness and availability of treatment options
- Imaging availability

Action plans/Tools

- Develop system within the hospital (Rapid Response, Code Stroke)
- Team approach or authorization to evaluate
- Map out the process
- Standing orders/protocols
- One call notification
- Transfer protocols
- Telemedicine Plan

- Questions?